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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

MILLER, PATRICK L

ART UNIT

PAPER NUMBER

2837

DATE MAILED: 12/18/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/033,652

Applicant(s)

STEAD ET AL.

Examiner

Patrick Miller

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133)
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) 1-40 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☐ Claim(s) 1-25 and 27-40 is/are rejected.
- 7) ☐ Claim(s) 24, 26, 36 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on 27 December 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s) ____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2 6) ☐ Other:

DETAILED ACTION

Claim Objections

1. Claims 24 and 36 are objected to because of the following informalities: See bullets below.

Appropriate correction is required.

- Claim 24 does not end with a period.
- Claim 36 cites "surround members". Claim 30 initially cites first and second surrounds, respectively, not surround members. There is a lack of antecedent basis for the term "surround members". Examiner suggests deleting the term "members" and changing "surround" to "surrounds".

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claim 31 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
 - Claim 31 cites the term "a voice coil". It is unclear if the applicant is referring to the same voice coil as cited in claim 30. Please clarify.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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3. Claims 1-6, 8-11, 13-16, 18-23, 25, 27-34, and 36-40 are rejected under 35 U.S.C. 102(b) as being anticipated by Sato (5,848,173).

- With respect to claims 1, 9, 11, 14, 30, 31, and 32, Sato discloses a dual sound transducer comprising: a cylinder located within a housing (Fig. 1, #7) where the cylinder has an upper edge (Fig. 1, #5 has an upper edge #8a), a diaphragm coupled to the upper edge of the cylinder [Claims 1, 14, 32] (Fig. 1, #8 coupled to #5 at #8a), a voice coil coupled to the cylinder [Claims 1, 11, 31] (Fig. 1, #4 coupled to #5), a first surround having inner and outer edges (Fig. 1, #6a), the first surround inner edge is coupled to the cylinder and the first surround outer edge is coupled to the housing (Fig. 1, #6a inner edge coupled to #5 and outer edge coupled to #7a), a second surround having inner and outer edges (Fig. 1, #6b), the second surround inner edge is coupled to the cylinder and the second surround outer edge is coupled to the housing (Fig. 1, #6b inner edge coupled to #5 and outer edge coupled to bottom portion of #7a), the first and second surrounds are coupled to the cylinder between the diaphragm and the voice coil (Fig. 1, #'s 6a and 6b are between #'s 8 and 4, respectively), the first and second surrounds are separated by a predetermined distance [Claims 9 and 30] (Fig. 1, #'s 6a and 6b are separated by a distance determined by the openings #13), and the second surround is between the first surround and the voice coil [Claim 31] (Fig. 1, #6b is between #'s 6a and 4).
- With respect to claims 2, 18, 19, and 33, the first and second surrounds are substantially similar in shape, including symmetry (Fig. 1, #'s 6a and 6b are similar and symmetrical).

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- With respect to claims 3 and 25, the first surround has a greater outer diameter than the second surround (Fig. 44, #6a has a slightly larger diameter than #6b because of the angled portion).
- With respect to claims 4 and 10, the voice coil has a pair of lead wires extending out of the housing between the first and second surrounds (Fig. 54, #43 extends out of the housing to #44 between #'s 6a and 6b, respectively).
- With respect to claims 5, 22, and 37, the first and second surrounds face up (Fig. 1, #'s 6a and 6b). Where the top side of the surround is interpreted to be the side to which the curved portion begins towards first.
- With respect to claims 6, 23, and 38, the first and second surrounds face downward (Fig. 1, #'s 6a and 6b). Where the top side (side facing downwards) is interpreted to be the side to which the curved portion *does not* begin towards first.
- With respect to claims 8, 21, and 39, the first and second surrounds face toward each other (Fig. 58, #'s 6a and 6b). Where the top side of the surround is interpreted to be the side to which the curved portion begins towards first.
- With respect to claim 13, the second surround is located between the first surround and the voice coil (Fig. 1, #6b is between #'s 6a and 4).
- With respect to claim 15, the cylinder has a circular cross-section. From Fig. 34, the bobbin is circular and therefore implies that the bobbin (Fig. 1, #5) has a circular cross-section.
- With respect to claim 20, the first surround is non-symmetrical to the second surround (Fig. 59, #6a is non-symmetrical to #6b).

- With respect to claims 16 and 34, the first and second surrounds have multiple half-circle rolls (Fig. 54, half-circle rolls of #'s 6a and 6b).
- With respect to claims 27 and 36, the first and second surrounds are constructed in a sinusoidal manner, thereby making the face also sinusoidal.
- With respect to claim 28, the first surround is coupled to a diaphragm (Fig. 42, #6a is shown coupled to #13).
- With respect to claim 29, the cylinder (bobbin) is made of a substantially rigid material (Col. 5, lines 9-16).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 7, 24, and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sato as applied to claims 1, 9, and 30 above, and further in view of Perkins (6,176,345).
 - Sato teaches all of the limitations of claims 1, 9, and 30 above, but with respect to claims 7, 24, and 40, does not disclose the first and second surrounds facing away from each other.
 - Perkins discloses a radiator with two surrounds, and the surrounds face away from each other (Fig. 3, #88 and 90 face away from each other). Perkin's motivation for facing the surrounds away from each other is so non-linear restoring forces are canceled out (Col. 6.

lines 66-67). This provides the advantage of canceling non-linear forces, which are generally more complicated to control and reduce.

- Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention to modify the transducer of Sato by making the first and second surrounds face away from each other, thereby providing the advantage of canceling non-linear forces, as taught by Perkins.
5. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sato as applied to claims 9 and 11 above, and further in view of Kohara (5,511,131).
- Sato teaches all of the limitations of claims 9 and 11 above, but with respect to claim 12, does not disclose the voice coil located between the first and second surrounds.
 - Kohara discloses a loudspeaker with a voice coil located between the first and second surrounds (Fig. 3, #55 is located between 61A and 61B). Kohara's motivation for positioning the voice coil as stated above, is to provide the advantage of enhancing the low frequency zone characteristics (Col. 4, lines 43-53).
 - Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention to modify the transducer of Sato by positioning the voice coil between the first and second surrounds, respectively. This produces the advantage of enhancing the low frequency zone characteristics, as taught by Kohara.
6. Claims 17 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sato as applied to claims 9 and 30 above, and further in view of White (3,997,023).

- Sato teaches all of the limitations of claims 9 and 30 above, but with respect to claims 17 and 35, does not disclose the first and second surrounds have a substantially parabolic cross-sectional roll.
- White discloses a surround that has a parabolic cross-section (Fig. 3). White's motivation for using a surround that has a parabolic cross-section is because this configuration provides the arched portion of the surround with relatively steep sidewalls, as compared with a semi-circular arch. This provides the advantage of offering a high resistance to shear stresses and, if effective in suppressing or attenuating undesirable circumferential or peripheral waves (Col. 2, lines 12-26). Further, although White only discloses one surround, a person of ordinary skill in the art would realize that both diaphragms in the transducer of Sato could be configured with parabolic surrounds.
- Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention to modify the transducer of Sato implementing parabolic cross-section surrounds, thereby providing the advantage of suppressing or attenuating undesirable circumferential or peripheral waves, as taught by White.

Allowable Subject Matter

7. Claim 26 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
 - With respect to claim 26, neither Sato nor the Prior Art discloses two surrounds being made from dissimilar materials.

Prior Art of Record

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- Pocock (US 2002/0144859) discloses a loudspeaker suspension where the surround is parabolic.
- Takewa (6,069,965) discloses a parabolic shaped surround (Fig. 10).
- Fryer (6,219,432) discloses a loudspeaker drive unit where the diaphragm and surround are made from different materials.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Patrick Miller whose telephone number is 703-308-4931. The examiner can normally be reached on M-F, 8:30-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Nappi can be reached on 703-308-3370. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9318 for regular communications and 703-872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-306-3431.

Patrick Miller
Examiner
Art Unit 2837

pm
December 12, 2002